Global Energy Policy Research | GEPR

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??CO2??
2??3??????????????????

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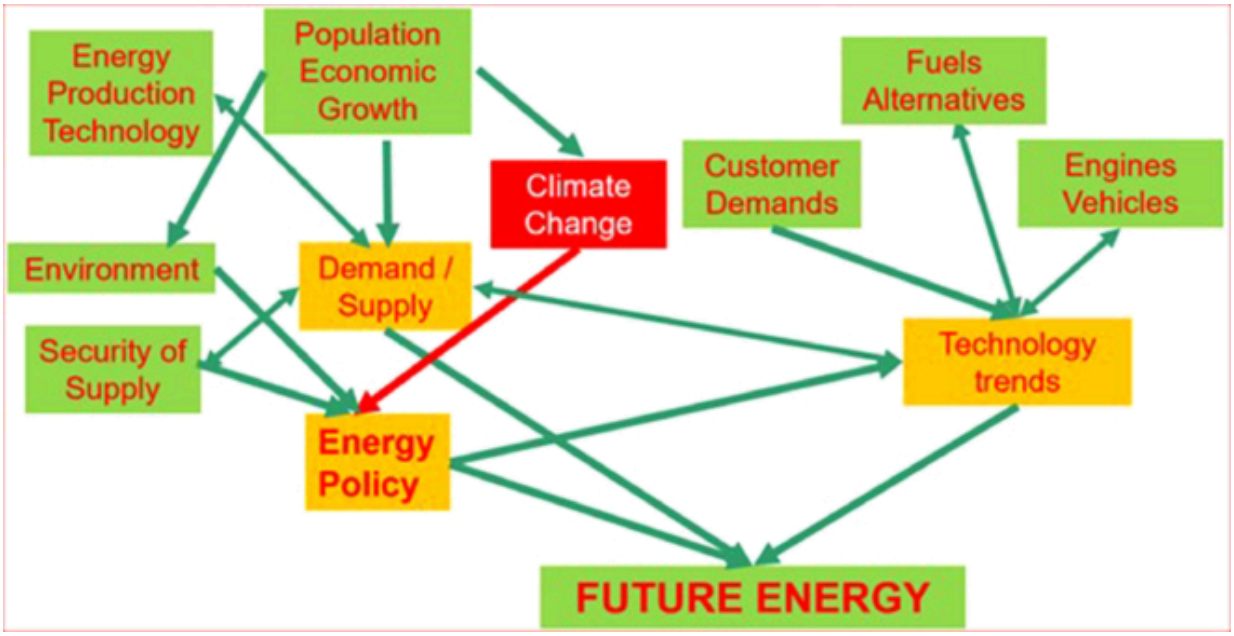

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?CO2??

2?????????????????????

?????1???2021??BP?????????????????????????????82.3%???????????????489.66EJ/??595.15 EJ???????????????1.75%????????

Table 1. Primary energy and electricity sources in exajoules, EJ (10^{18} joules) and installed wind and solar capacity in GW for 2021 [7]. Electricity generation converted to EJ from TWh. 1 EJ= 277.8 TWh.

Country	World	China	U.S.A	India	UK
Oil, EJ	184.21	30.6	35.33	9.41	2.5
Natural Gas, EJ	145.35	13.63	29.76	2.24	2.77
Coal, EJ	160.1	86.7	10.57	20.09	0.21
Total fossil fuel, EJ	**489.66**	**130.93**	**75.66**	**31.74**	**5.48**
Actual delivered Wind, EJ	6.7	2.36	1.38	0.245	0.232
Actual delivered Solar, EJ	3.72	1.177	0.594	0.246	0.045
Nuclear, EJ	25.31	3.68	7.4	0.4	0.41
Hydro, EJ	40.26	12.25	2.43	1.51	0.06
Other, EJ	29.5	7.253	5.306	1.289	0.953
Total Primary Energy, EJ	**595.15**	**157.65**	**92.97**	**35.43**	**7.18**
Electricity Generation					
Installed wind capacity, GW	824.9	329	132.7	40.1	27.1
Installed Solar Capacity, GW	843.1	306.4	93.7	49.3	13.7
Total electricity generated, EJ	102.47	30.72	15.86	6.173	1.116

Other includes bioenergy, geothermal etc.

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3.6kJ???????100?????????????????????????????????100?????????????????????????????40?????
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???????1kWh????860.6kcal?????????????860.6kcal????1kWh?????????????????????Wh?????????
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???Wh????????????J or cal?????????????????????????41.5%?????????????????????IEA?????????????????????10?????33?
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?????????????????????????????BP?????1kWh = 860.6kcal = 3.6kJ?IEA?????????????????????????????41.5%????????0.415????1kWh = 2074kcal = 8.67kJ???0.415???????????????

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???1kWh???????????????0
.1?0.33?1.0???

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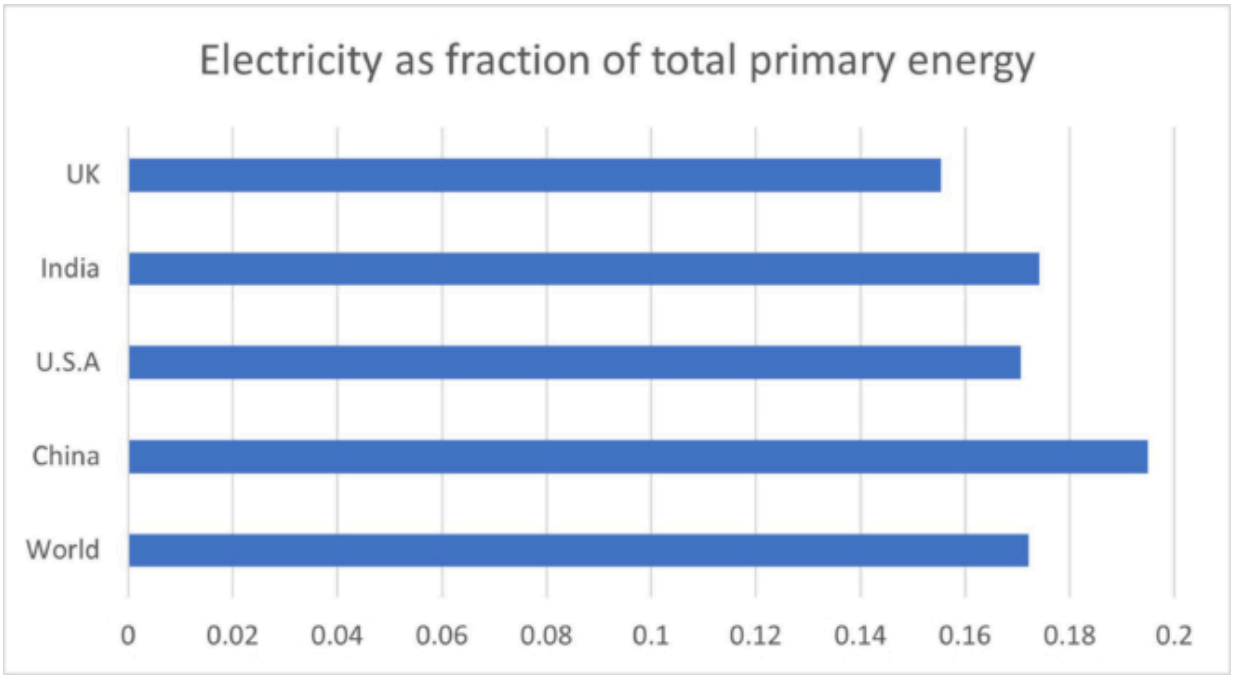
????????????????????489.66EJ???????????105.49EJ??254.19EJ?????0.415?????2.4?????????????5
95.15EJ??743.85EJ?????????????????????????????17.7%?=106.49/595.15??????????34.2%?=254.19
/743.85??????

?2?????????????????????????????????????10?????????????????????????????????2????????????????
???34.2%?????????????????40???????????????



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?3?????????????????????????????25?????????????????10???????????????CO2?????????????????
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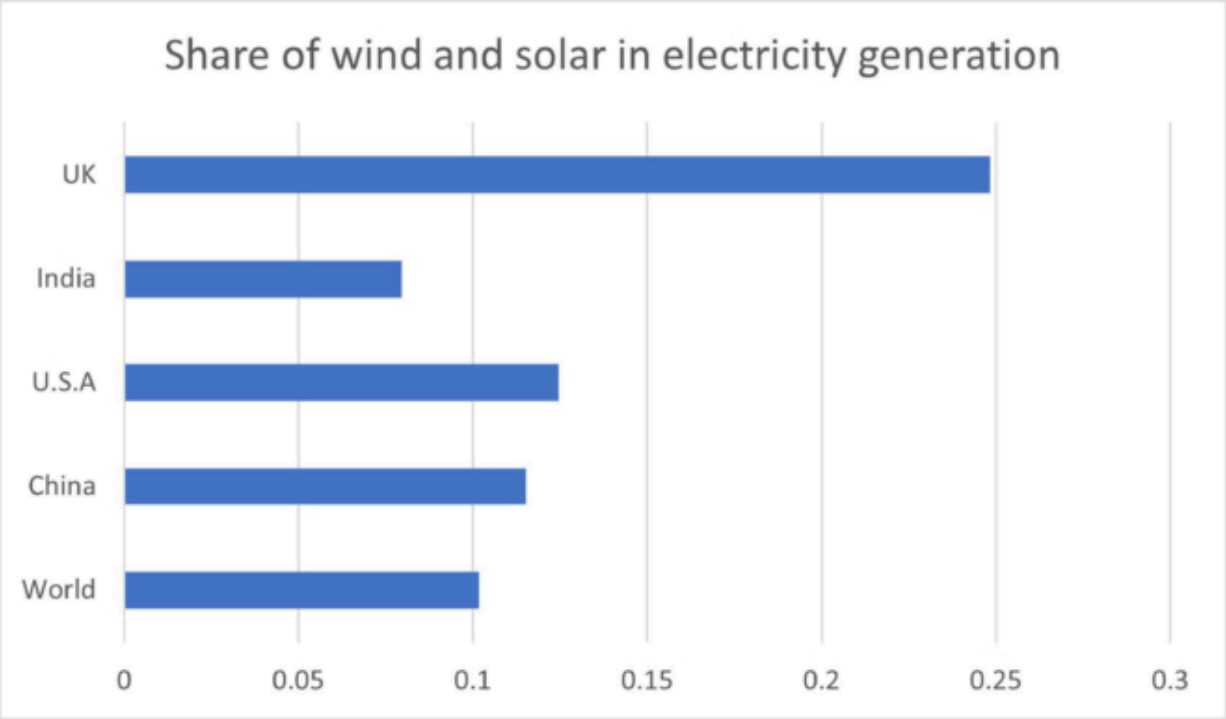

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?4?????????Capacity Factors, CF???1?????????????????????????????????????
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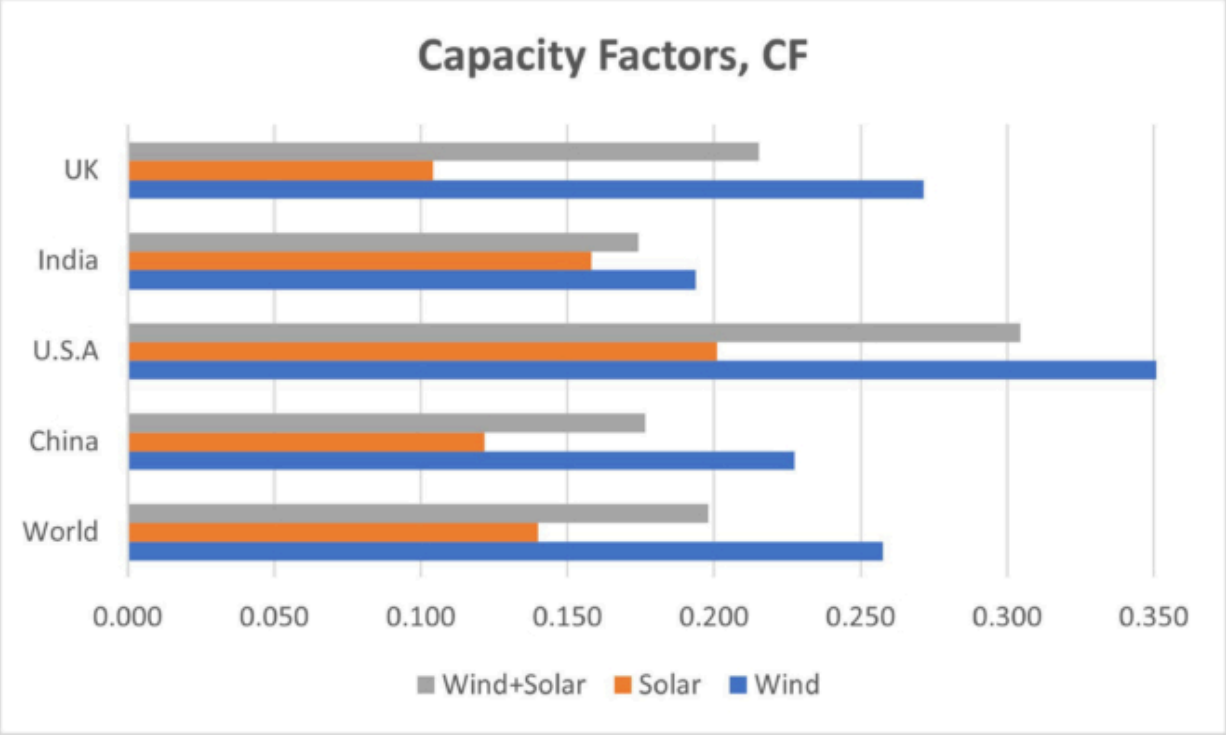

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